UNIVERSITI TEKNOLOGI MARA

MOLECULAR SEXING APPROACH USING CHD MARKER FOR MONOMORPHIC BIRDS OF GUNUNG LEDANG, NATIONAL PARK, JOHOR.

JESSEY ANGAT

Thesis submitted in fulfillment
of the requirements for the degree of
Master of Science

Faculty of Applied Sciences

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CONFIRMATION BY PANEL OF EXAMINERS

I certify that a Panel of Examiners has met on 23rd February 2016 to conduct the final examination of Jessey Angat on her Master of Science thesis entitled "Molecular sexing approach using CHD marker for monomorphic birds of Gunung Ledang, National Park, Johor" in accordance with Universiti Teknologi MARA Act 1976 (Akta 173). The panel of examiners recommends that the students be awarded the relevant degree. The panel of Examiners was as follows:

Khadijah Omar
Associate Professor
Faculty of Applied Sciences
Universiti Teknologi MARA
(Chairperson)

Badrul Munir Md Zain
Associate Professor
Faculty of Science and Technology
Universiti Kebangsaan Malaysia
(External Examiner)

Zainon Mohd Noor
Associate Professor
Faculty of Applied Sciences
Universiti Teknologi MARA
(Internal Examiner)

SITI HALIJJAH SHARIFF, PhD
Associate Professor
Dean
Institute of Graduates Studies
Universiti Teknologi MARA
Date : 15th April, 2016

AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

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Name of Student	:	Jessey Angat
Student I.D No	:	2012257378
Programme	:	Master of Science
Faculty	:	Applied Sciences
Thesis Title	:	Molecular Sexing Approach Using CHD Marker for Monomorphic Birds of Gunung Ledang, National Park, Johor.
Signature of Student	:	.....
Date	:	April 2016

ABSTRACT

Many conservation centers in Malaysia have presented serious problem in sexing monomorphic birds as it does not possess any noticeable morphological differences between sexes. Therefore, it is very hard for them to establish the breeding strategies, conservation and management programs. Polymerase Chain Reaction (PCR) would accurately recognize which gender, by comparing the intron length between the Chromo Helicase DNA-binding gene (CHD) in Z and W chromosomes. A total of 150 individual birds from 5 species were captured from 10 sites by mist nets. The genes were amplified with 1237L/1272H, 2550F/2718R and P2/P8 primer pairs. Result showed sex determination was unambiguous in all species thus, PCR method alone was sufficient for an effective and fast in sex determination except for the Water-breasted Waterhen with 2550F/2718R primer set. The sex ratio between male and female individual was 1:1. The validity and effectiveness of using thoracic feather were tested with the aim to inflict the only potential feather that will be used for future sexing purposes. Adding more samples is vital in the future as to gain more accurate number of individual species in Gunung Ledang, National Park, Johor. In addition, habitat preferences and behavior as well as morphometric measurement in each individual of bird is required as this would assist in the alternative sexing methodology notably using discriminant function along with PCR-based molecular techniques. Overall, the outcome could have a crucial impact on many protection and reintroduction activities based on molecular-based application, hence granting preservation and enhancement of biodiversity in Malaysia.

TABLE OF CONTENTS